Handpiece Controls

Controls

This section provides information related to the servicing, maintenance, and adjustment of handpiece controls. Detail on how to service control heads, control blocks, and troubleshoot specific problems related to them is presented.

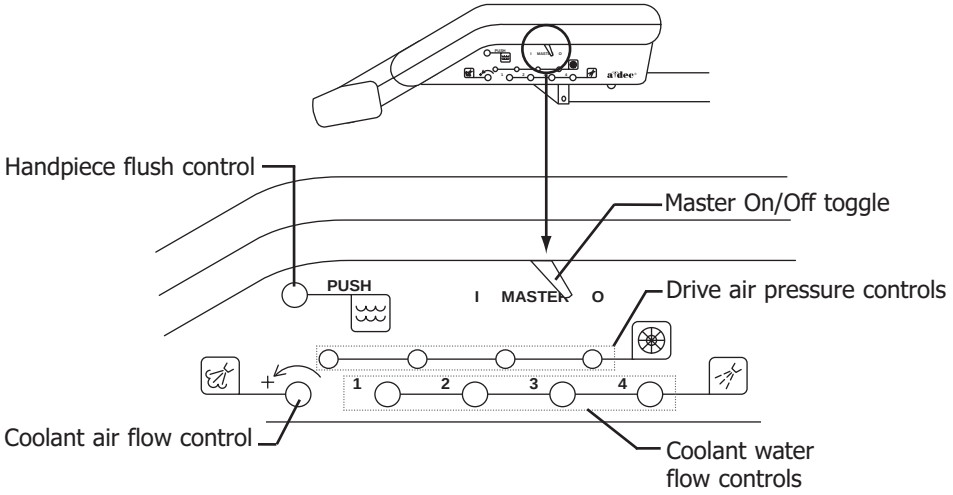
Holders

Additional information covered in this section includes assembly, service, and maintenance information for A-dec handpiece holders. Flow diagrams, replacement part information, and troubleshooting tips are presented.

Making Handpiece Control Adjustments

Location of Control Adjustments

The control adjustments for the handpiece flush control, drive air pressure, coolant air flow, and coolant water flow are located on the side of the control head.



Location of Control Adjustments on the Control Head

Operators Adjustments

Use the adjustment key to make adjustments, with the exception of the drive air pressure. The adjustment key will not fit the drive air control ports. This was done to prevent unintentional changes to drive air settings. To adjust the drive air, use a 3/32" hex key.

Adjusting Coolant Water

Using the adjustment key or a 1/8" hex key, follow these steps to adjust the coolant water flow for each handpiece. Turn the key clockwise to decrease the coolant water flow and counterclockwise to increase the coolant water flow.

Task	Description
1	Insert the key into the adjustment port for the handpiece being adjusted.
2	Turn clockwise until it seats softly.
3	Move the foot control's wet/dry toggle to the ON position (toward blue dot).
4	Run the handpiece at medium speed.
5	Adjust the coolant water until 2-3 drops per second are visible.

Adjusting Coolant Air

Using the adjustment key (or a 1/8" hex key), follow these steps to adjust the coolant air flow for each handpiece. Turn the key clockwise to decrease the coolant air flow and counterclockwise to increase the coolant air flow.

Task	Description
1	Insert the key into the adjustment port (one location for all handpieces).
2	Run the handpiece at medium speed.
3	Adjust the coolant air by turning the key counterclockwise (until a fine mist is visible around the bur).

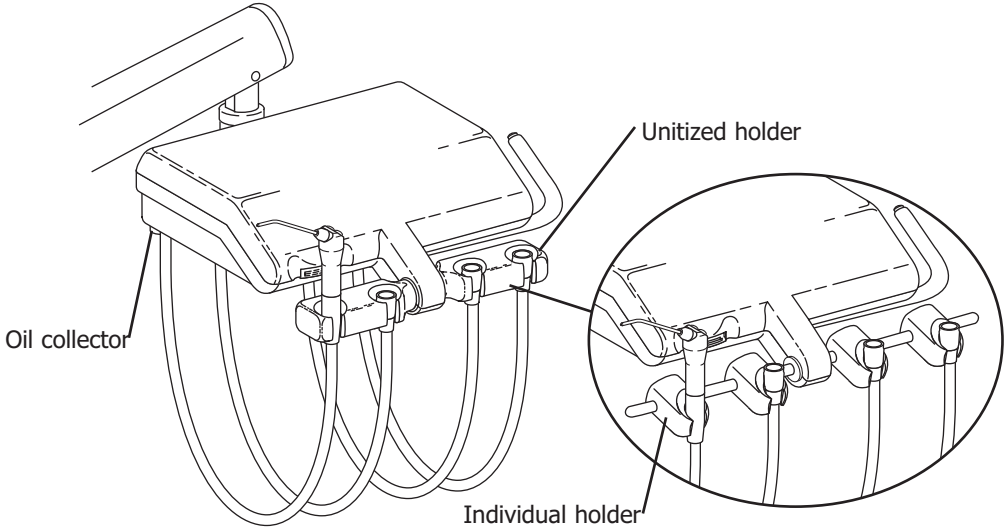
Adjusting Drive Air

Follow these steps to adjust the drive air using a 3/32" hex key.

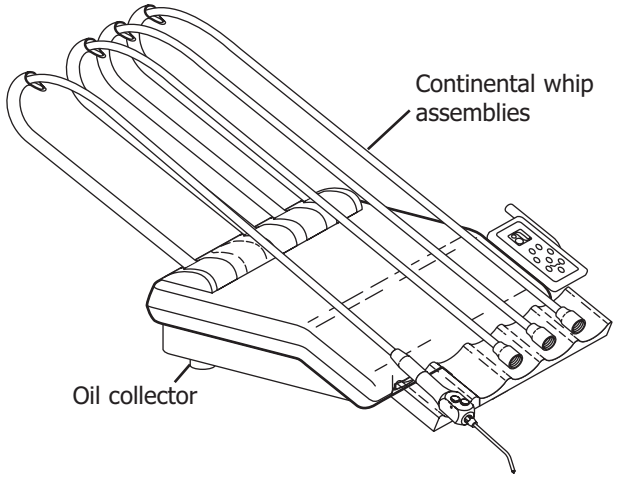
Task	Description
1	Install the handpiece on a drive air pressure gauge.
2	Locate drive air control for the handpiece being adjusted and insert the hex key.
3	Install the handpiece gauge on the coupler.
4	Move the foot control's wet/dry toggle to OFF (away from blue dot) and fully depress the foot control cover.
5	Turn the drive air control counterclockwise until the handpiece is running slightly above the manufacturer's specified drive air pressure, then turn clockwise until it is at the specified pressure.
6	Repeat adjustments 1-5 for each handpiece position.

Working with Delivery Systems

The following pages provide instructions and service information on parts associated with A-dec's delivery systems.



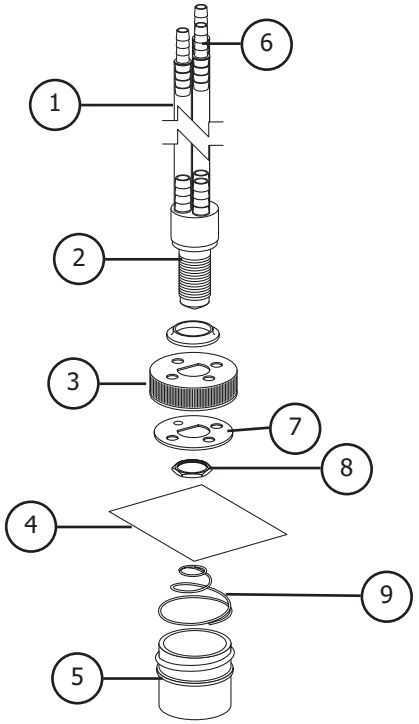
Cascade Traditional Delivery System



Cascade Continental Delivery System

Oil Collector

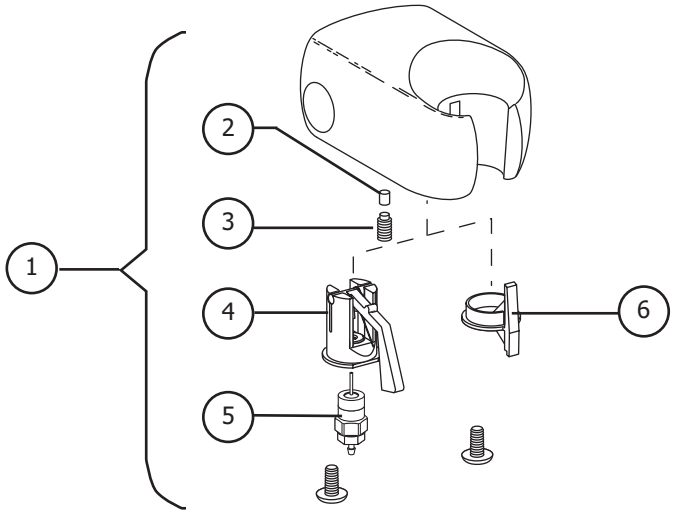
Item #	Part Number	Description
1	—	Clear tubing, 1/4"
2	—	Oil collector manifold
3	24.0416.00	Cap
4	—	Gauze pad
5	052.023.00	Jar
6	023.045.02	Inline barbs
7	—	Deflector spacer
8	006.009.00	Nut
9	013.090.00	Spring



Oil Collector

Individual Holder

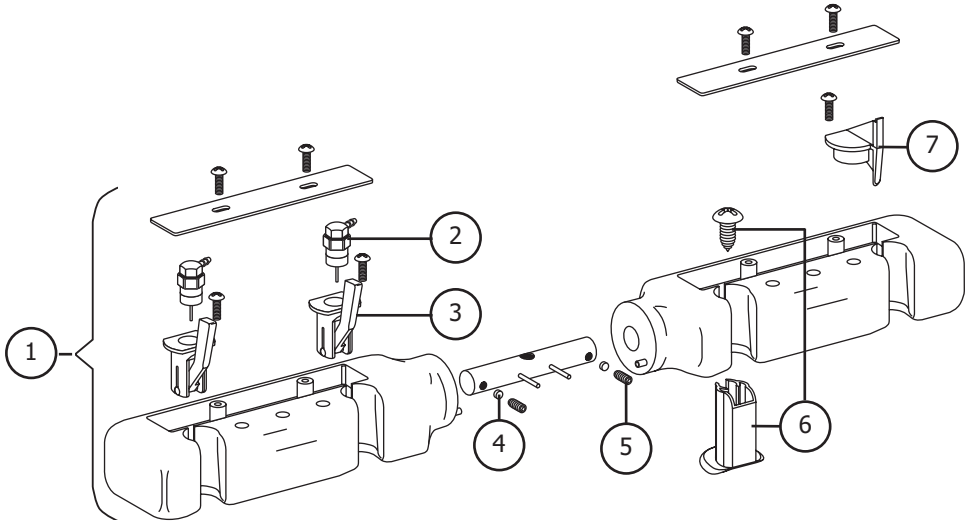
Item #	Part Number	Description
1	99.0583.00 99.0584.00	Auto holder assy Assistant's holder assy
2	45.0403.00	Friction pad
3	007.056.00	Setscrew, socket cup point
4	99.0590.00	Actuator, auto holder
5	33.0025.01	Air bleed valve (individual)
6	99.0587.00	Slot plug



Individual Holder

Unitized Holder

Item #	Part Number	Description
1	99.0603.00 99.0604.00 99.0605.00 99.0606.00	Traditional, 3-position Traditional, 4-position Traditional, 5-position Traditional, 6-position
2	33.0132.00	Air bleed valve (unitized)
3	99.0590.00	Actuator, auto holder
4	45.0403.00	Friction pad
5	007.056.00	Setscrew, socket cup point
6	99.0607.00	Plug and screw
7	99.0587.00	Slot plug

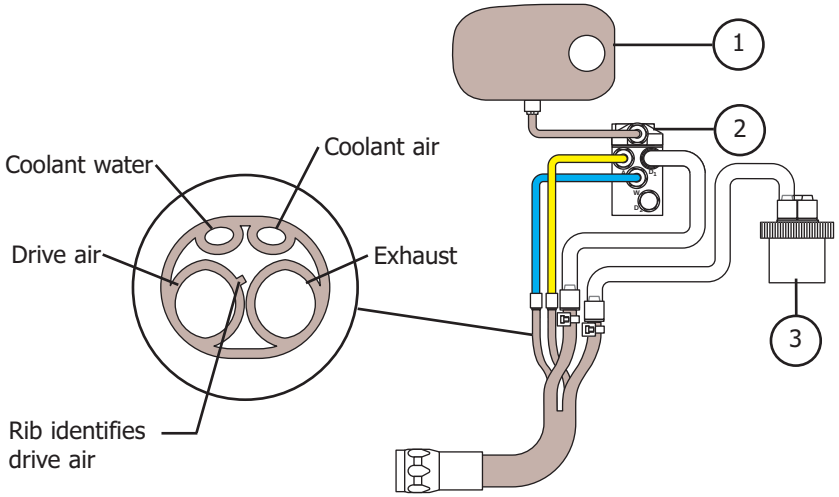


Unitized Holder (Two and Three-Position)

NOTE: Complete holder replacement is recommended if a holder is broken. For more information on service parts, see the *Genuine A-dec Service Parts Catalog* (P/N 85.5000.00) or contact customer service.

Traditional Holder

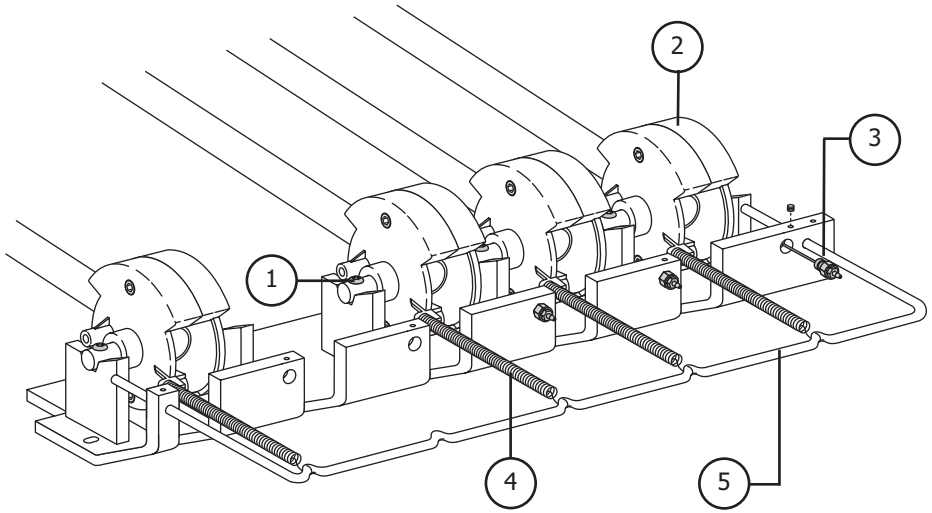
Item #	Part Number	Description
1	99.0584.00	Single molded holder, assistant, Surf 4
	99.0583.00	Single molded holder, auto, Surf 4
	99.0629.00	2-position unitized holder, LH
	99.0619.00	3-position unitized holder, LH
	99.0628.00	2-position unitized holder, RH
	99.0618.00	3-position unitized holder, RH
2	38.0509.00	Century Plus control block
3	24.0410.00	Oil collector



Holder and Handpiece Tubing to Control Block

Cascade Continental Whip Assembly

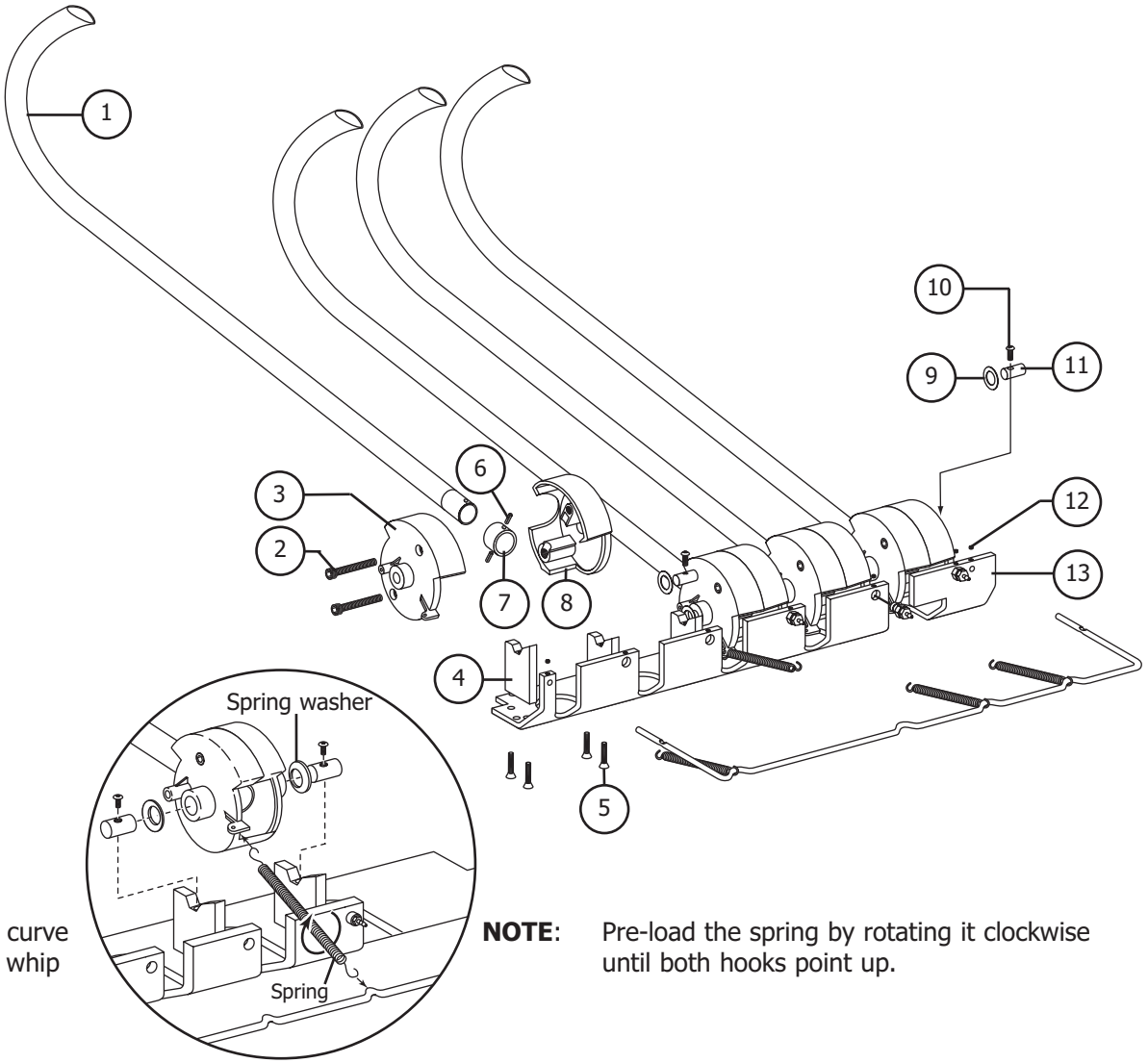
Item #	Part Number	Description
1	002.034.01	Screw, button head socket
2	39.1054.00	Continental whip assembly
3	33.0025.01	Air bleed valve, long stem
4	013.015.00 013.027.00	Spring, Red (standard 3 lb pull) Spring, Green (optional 4 lb pull)
5	39.1053.00	Spring rod



Continental Whip Assembly

Continental Whip

Item #	Part Number	Description
1	39.1060.00	Whip
2	001.026.00	Screw, socket head
3	75.0066.00	Pivot wheel
4	39.1055.00	Post
5	001.121.01	Screw, socket head
6	011.091.00	Spring pin
7	39.1059.00	Whip ring
8	75.0067.00	Pivot wheel
9	004.162.00	Spring washer
10	002.034.01	Screw, button head
11	39.1050.00	Short pin
12	007.010.00	Setscrew
13	39.1052.00	Mounting bracket



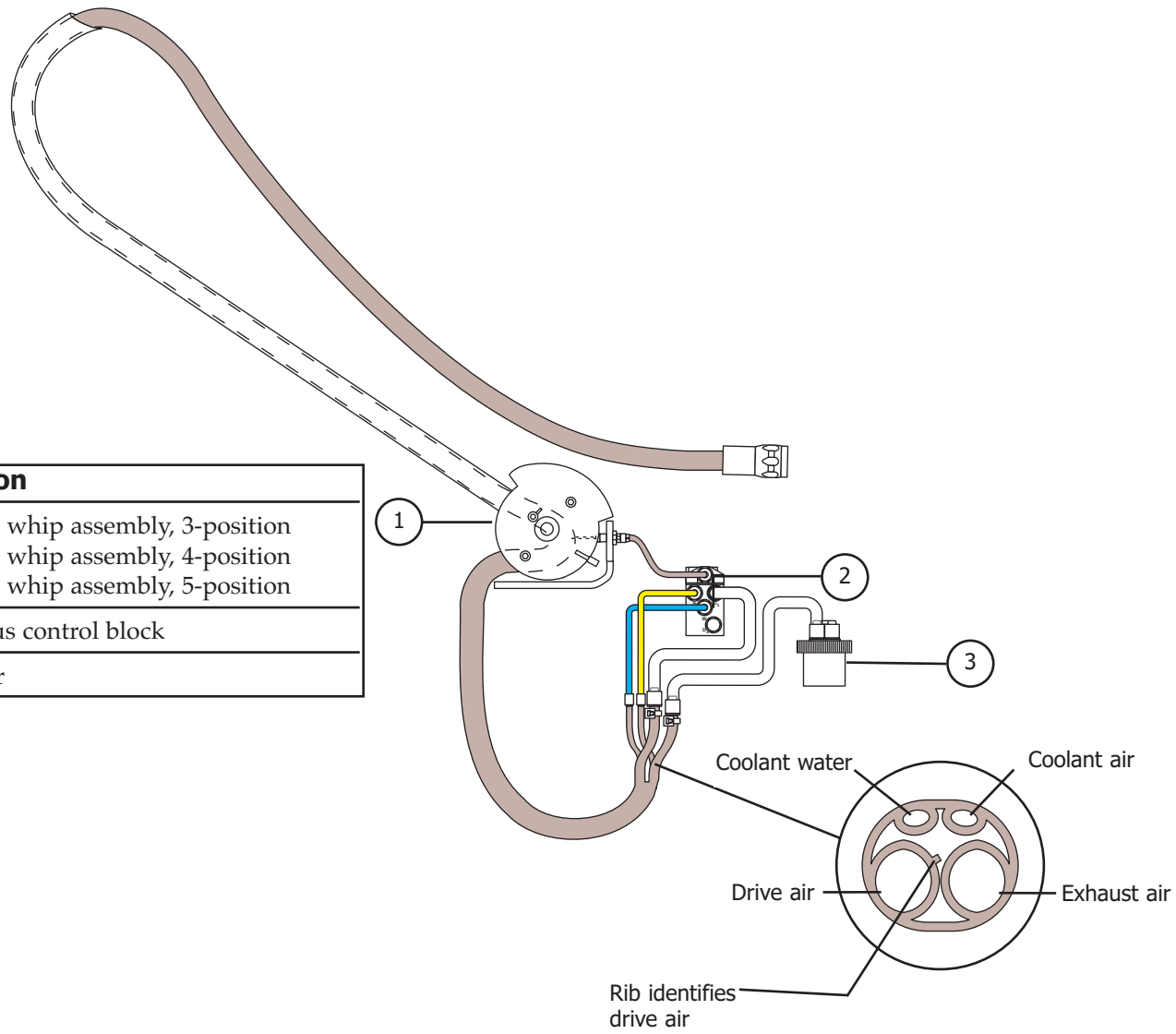
NOTE: Spring washer curve is towards the whip assembly(ies).

NOTE: Pre-load the spring by rotating it clockwise until both hooks point up.

34.1054.00 Continental Whip Assembly

Continental Holder

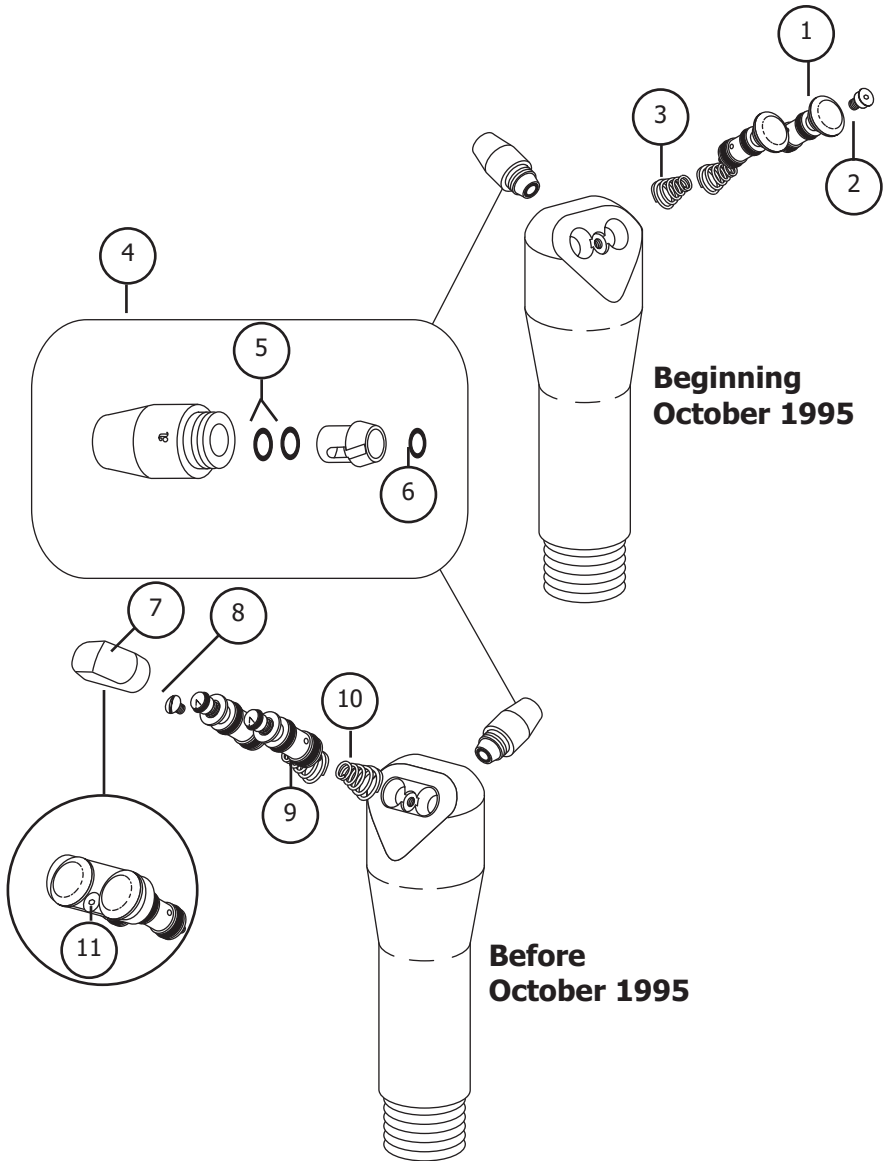
Item #	Part Number	Description
1	99.0613.00 99.0614.00 99.0615.00	Continental whip assembly, 3-position Continental whip assembly, 4-position Continental whip assembly, 5-position
2	38.0509.00	Century Plus control block
3	24.0410.00	Oil collector



Holder and Handpiece Tubing to Control Block

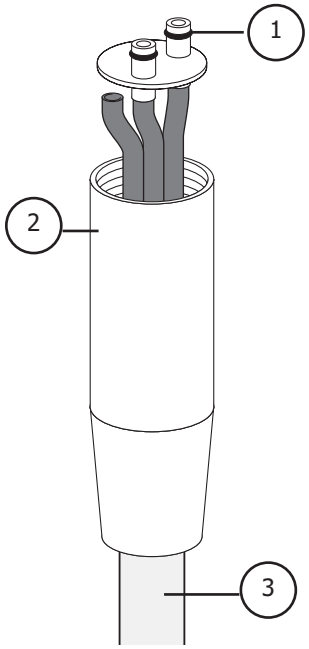
Autoclavable Syringe

Item #	Part Number	Description
	23.1011.00	Autoclavable syringe head assembly
	23.1150.00	Autoclavable syringe assembly and 7' tubing
	23.1099.00	Autoclavable syringe service kit, 2 button
	23.1012.00	Autoclavable syringe service kit, soft button
1	23.1232.01	Valve assembly with o-rings, autoclavable
2	23.1193.01	Screw pkg 5
3	013.064.01	Spring pkg 10
4	23.1112.00	Syringe tip retainer, non-locking
5	035.048.01	O-ring pkg 10
6	034.003.01	O-ring pkg 10
7	23.1028.00	Soft button, autoclavable
8	001.002.01	Screw pkg 5
9	23.1021.01	Valve assembly with o-rings pkg 2
10	013.064.01	Spring pkg 10
11	23.1194.00	Two-button valve conversion kit



Syringe Terminal, 2 Barb, Non-Quick Disconnect

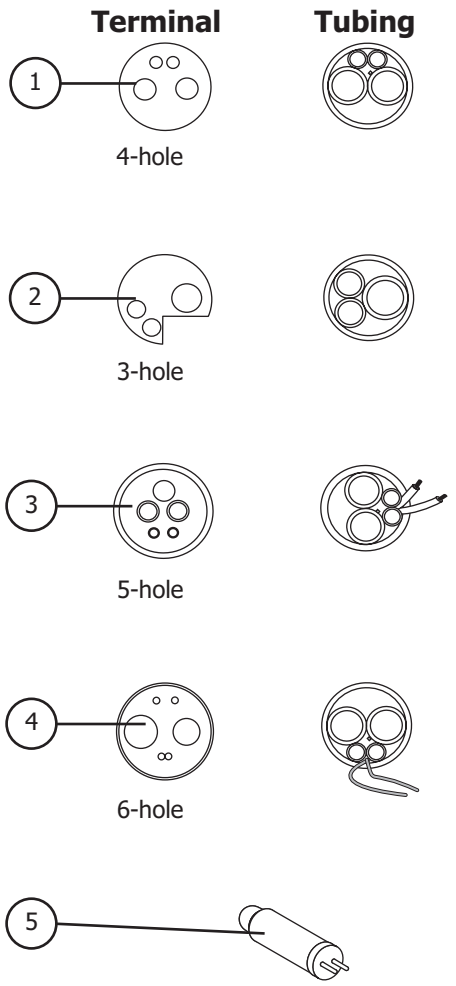
Item #	Part Number	Description
1	030.002.02	O-ring pkg 10
2	23.1015.00	Handle
3	024.155.02	Syringe tubing assembly, straight 7'



23.1208.00

Tubing to Terminal

Item #	Part Number	Description
1	98.0879.00	Four-hole tubing (straight) with Midwest terminal, 84" (2134mm), Surf 4
2	98.0882.00	Three-hole tubing (straight) with Borden terminal, 84" (2134mm), Surf 4
3	98.0262.02	Fiber-optic tubing (straight, with bulb) 84" (2134mm), Surf 4
4	98.0885.00	Fiber-optic tubing (straight), six pin, 84" (2134mm), Surf 4
5	041.317.00	Fiber-optic lamp, Xenon 3.5V, .75 amp

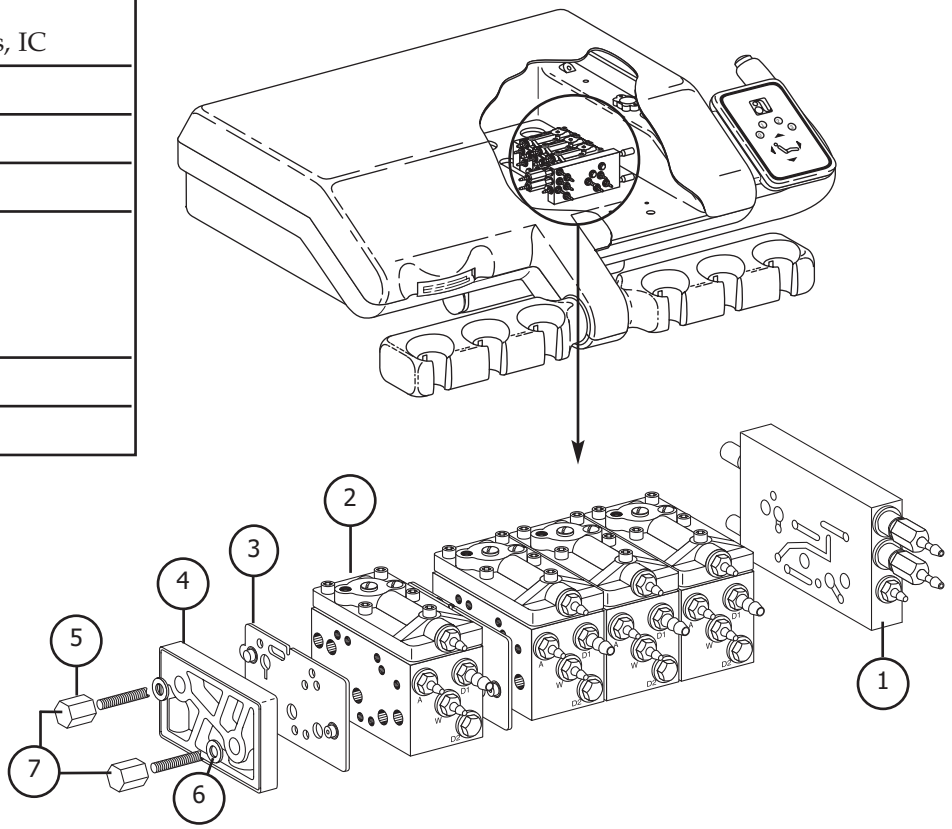


Tubing Terminals

Working with the Century Plus Control Assembly

The A-dec Century Plus handpiece control system incorporates a master block, handpiece flush, and air bleed functions into the control block system, reducing external tubing and connections. The following pages provide illustrations, flow diagrams, and service information on parts that are used to maintain and adjust the control block assembly.

Item #	Part Number	Description
1	38.0524.00 38.0528.00	Manifold assembly Manifold assembly, Century Plus, IC
2	38.0509.00	Century Plus control block
3	38.0507.01	Gasket
4	38.0505.00	End cap
5	38.0504.06 38.0504.07 38.0504.08 38.0504.09	Tie bolt kit, 2 block Tie bolt kit, 3 block Tie bolt kit, 4 block Tie bolt kit, 5 block
6	004.036.00	Nylon float washer
7	38.0508.00	Nut, special

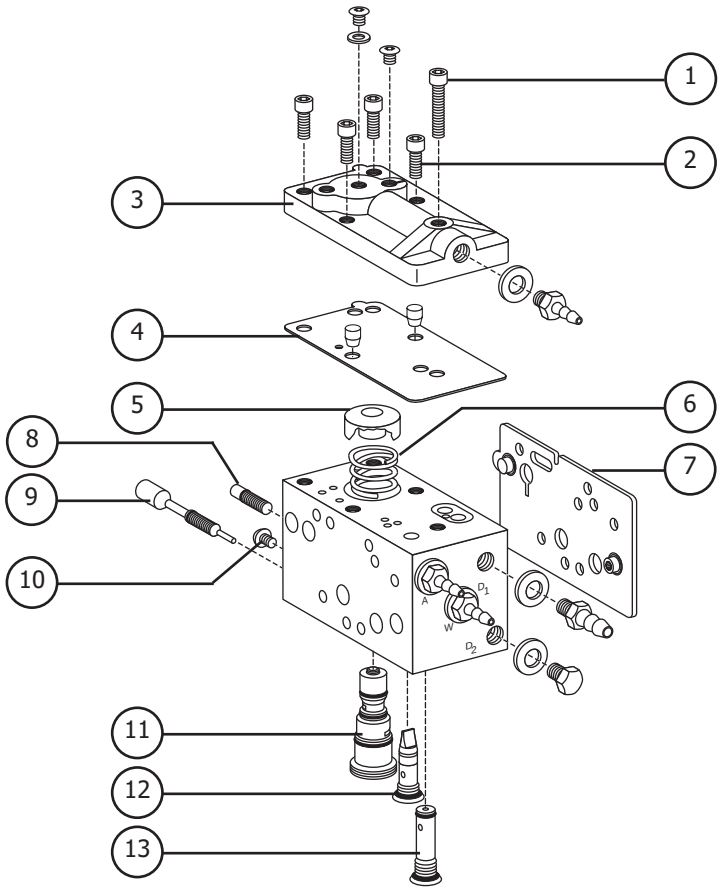


Century Plus Control Block Assembly

Century Plus Control Block

For information about Century Plus handpiece control kits or A-dec replacement parts, refer to the *Genuine A-dec Service Parts Catalog,* P/N 85.5000.00.

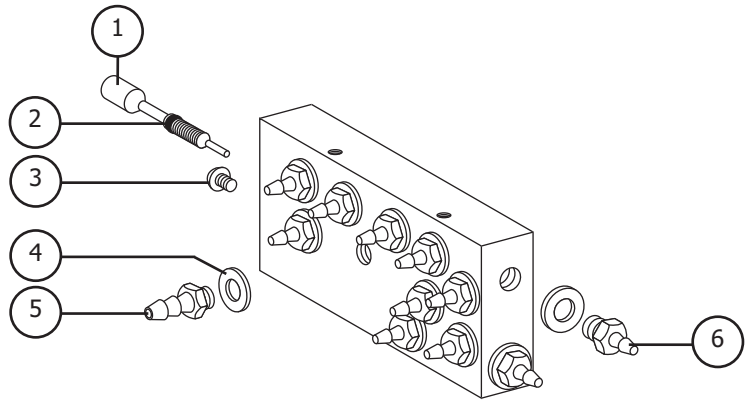
Item	Part Number	Description
1	001.021.01	Screw, socket head
2	001.024.01	Screw, socket head
3	38.0546.00	Cap assembly
4	38.0519.01	Diaphragm
5	38.0514.00	Water valve actuator
6	013.021.00	Spring, compression
7	38.0507.01	Molded side gasket
8	38.0510.00 035.034.01	Drive air flow adjustment stem Drive air flow adjustment stem w/o-ring
9	38.0516.00 035.034.01	Water flow adjustment stem Water flow adjustment stem w/o-ring
10	002.118.00	Screw, button head
11	38.0520.00	Water valve cartridge assembly
12	38.0518.00	Check valve (with duckbill) cartridge
13	38.0517.00	Air bleed cartridge (with o-rings)



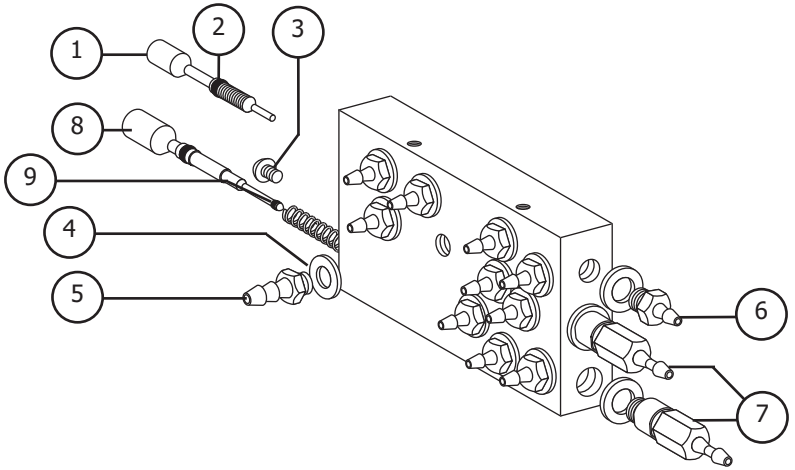
Century Plus Control Block Serviceable Parts

Century Plus Control Block

Item #	Part Number	Description
1	38.0526.00	Air coolant stem with o-rings
2	030.003.02	O-ring
3	002.118.00	Screw, button head
4	004.005.02	Washer
5	023.001.03	Barb, 1/4"
6	023.004.03	Barb, 1/8"
7	38.0555.00 38.0555.00	Syringe water flow control barb assembly Syringe air flow control barb assembly
8	38.0525.00	Flush valve stem with o-rings
9	034.001.01	O-ring, E, .029 10 x .040 W



38.0528.00 Century Plus Control Block Manifold for Decade Carts

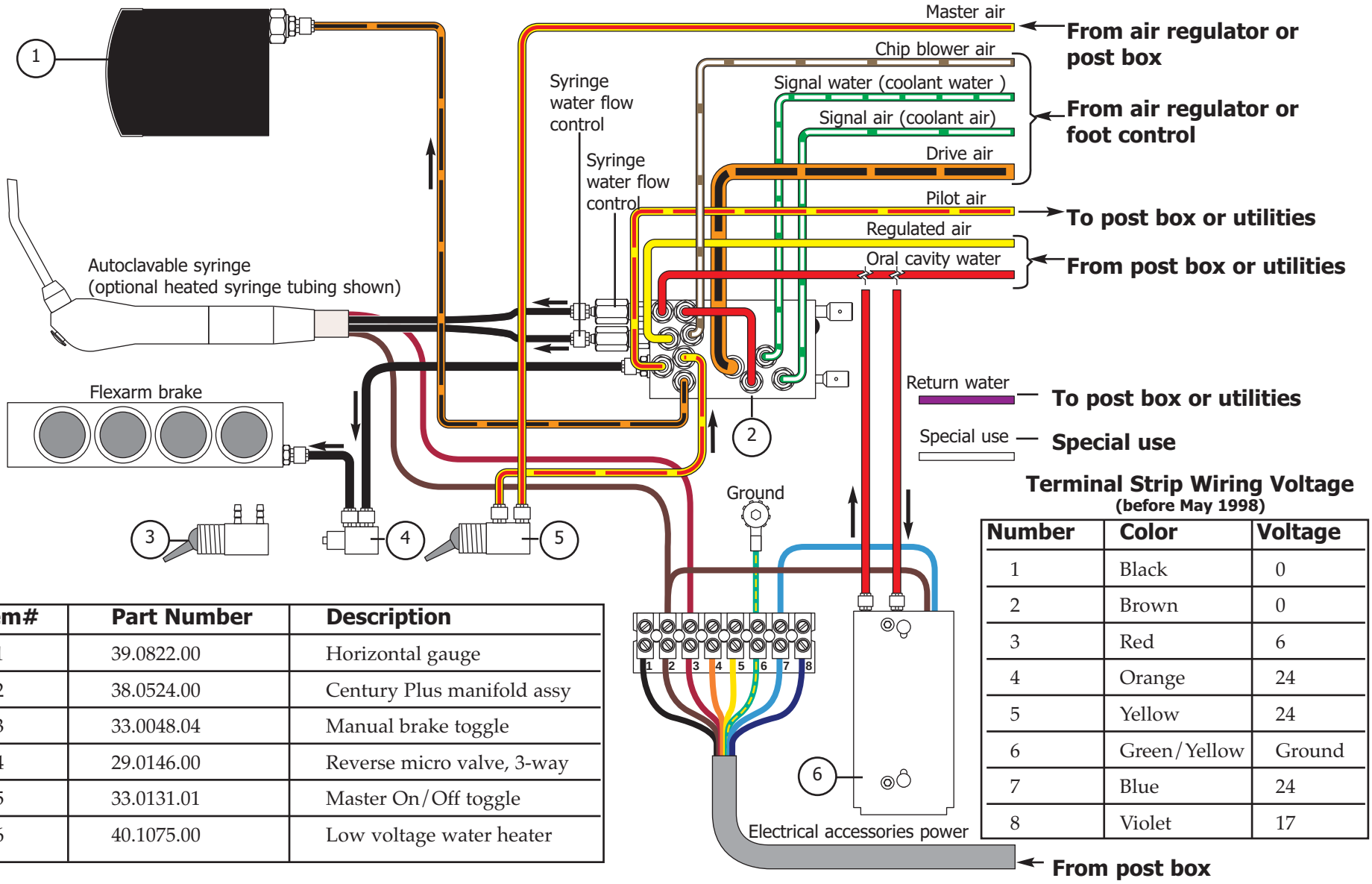


38.0524.00 Century Plus Control Block Manifold for Cascade

Handpiece Controls

Control Block Flow Diagram

Before May 1999



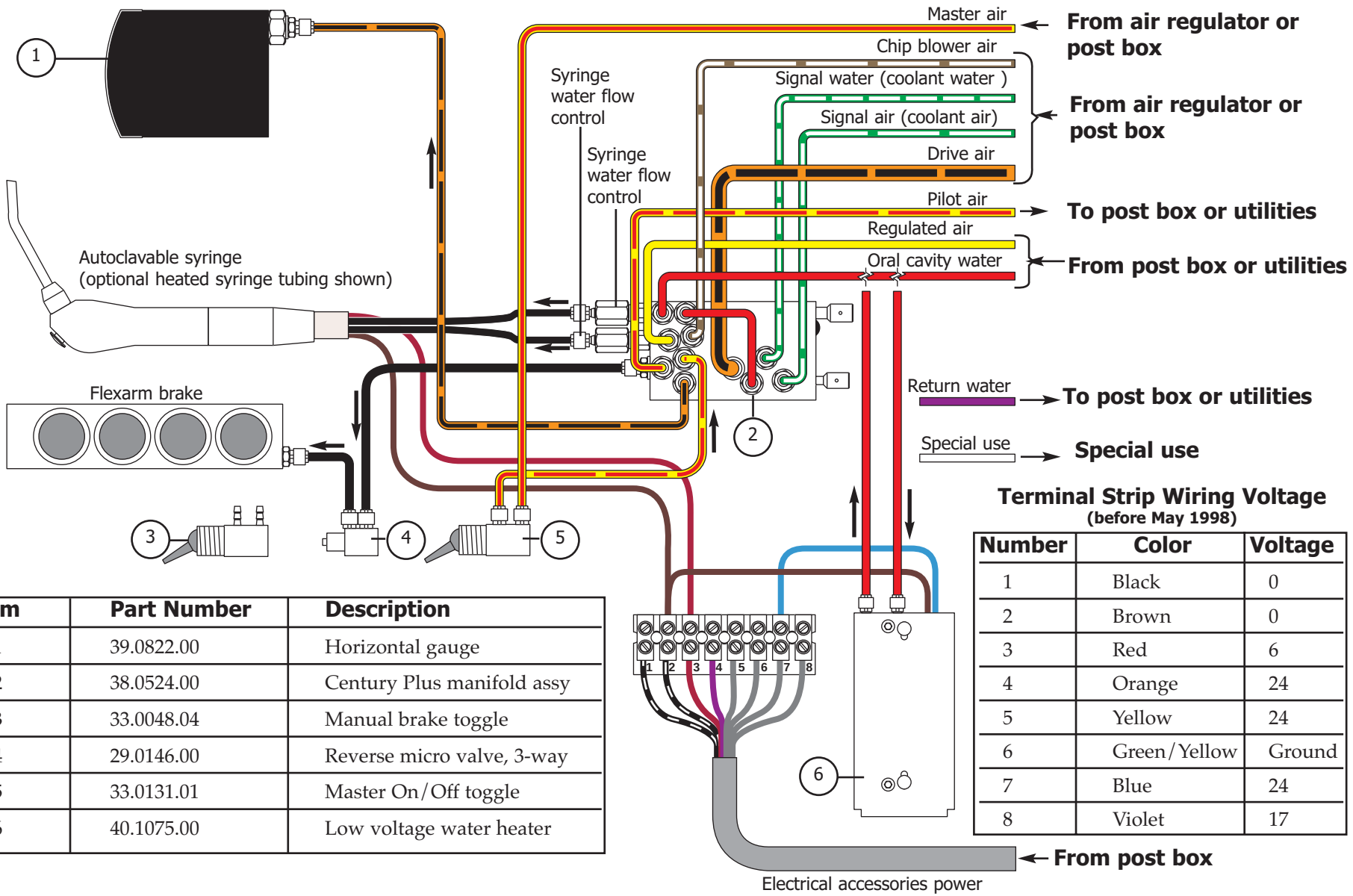
Item#	Part Number	Description
1	39.0822.00	Horizontal gauge
2	38.0524.00	Century Plus manifold assy
3	33.0048.04	Manual brake toggle
4	29.0146.00	Reverse micro valve, 3-way
5	33.0131.01	Master On/Off toggle
6	40.1075.00	Low voltage water heater

Terminal Strip Wiring Voltage
(before May 1998)

Number	Color	Voltage
1	Black	0
2	Brown	0
3	Red	6
4	Orange	24
5	Yellow	24
6	Green/Yellow	Ground
7	Blue	24
8	Violet	17

Control Block Flow Diagram

After April 1998



Item	Part Number	Description
1	39.0822.00	Horizontal gauge
2	38.0524.00	Century Plus manifold assy
3	33.0048.04	Manual brake toggle
4	29.0146.00	Reverse micro valve, 3-way
5	33.0131.01	Master On/Off toggle
6	40.1075.00	Low voltage water heater

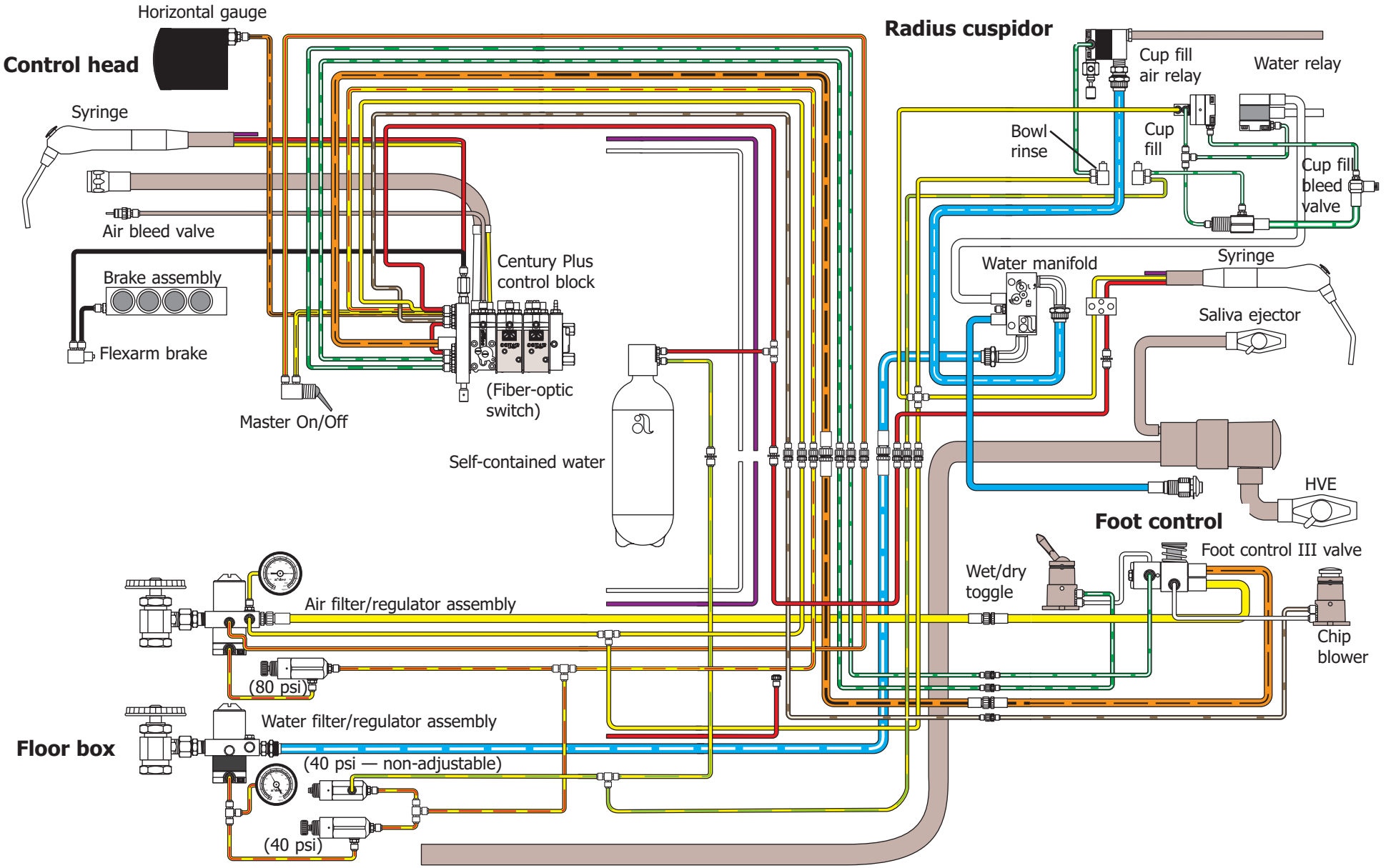
Terminal Strip Wiring Voltage
(before May 1998)

Number	Color	Voltage
1	Black	0
2	Brown	0
3	Red	6
4	Orange	24
5	Yellow	24
6	Green/Yellow	Ground
7	Blue	24
8	Violet	17

Handpiece Controls

Radius Delivery System Flow Diagram

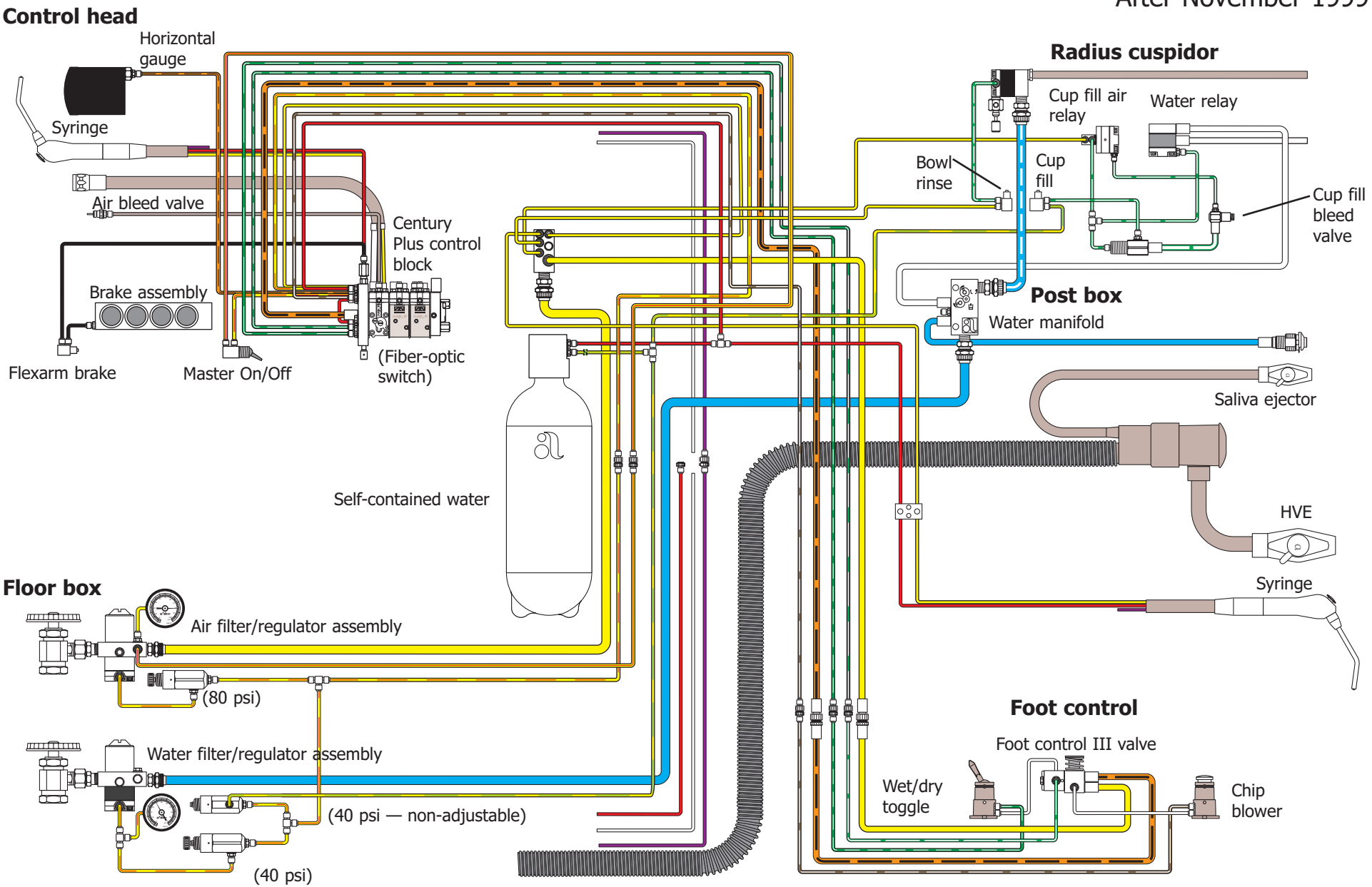
After November 1999



Handpiece Controls

Cascade Delivery System Flow Diagram

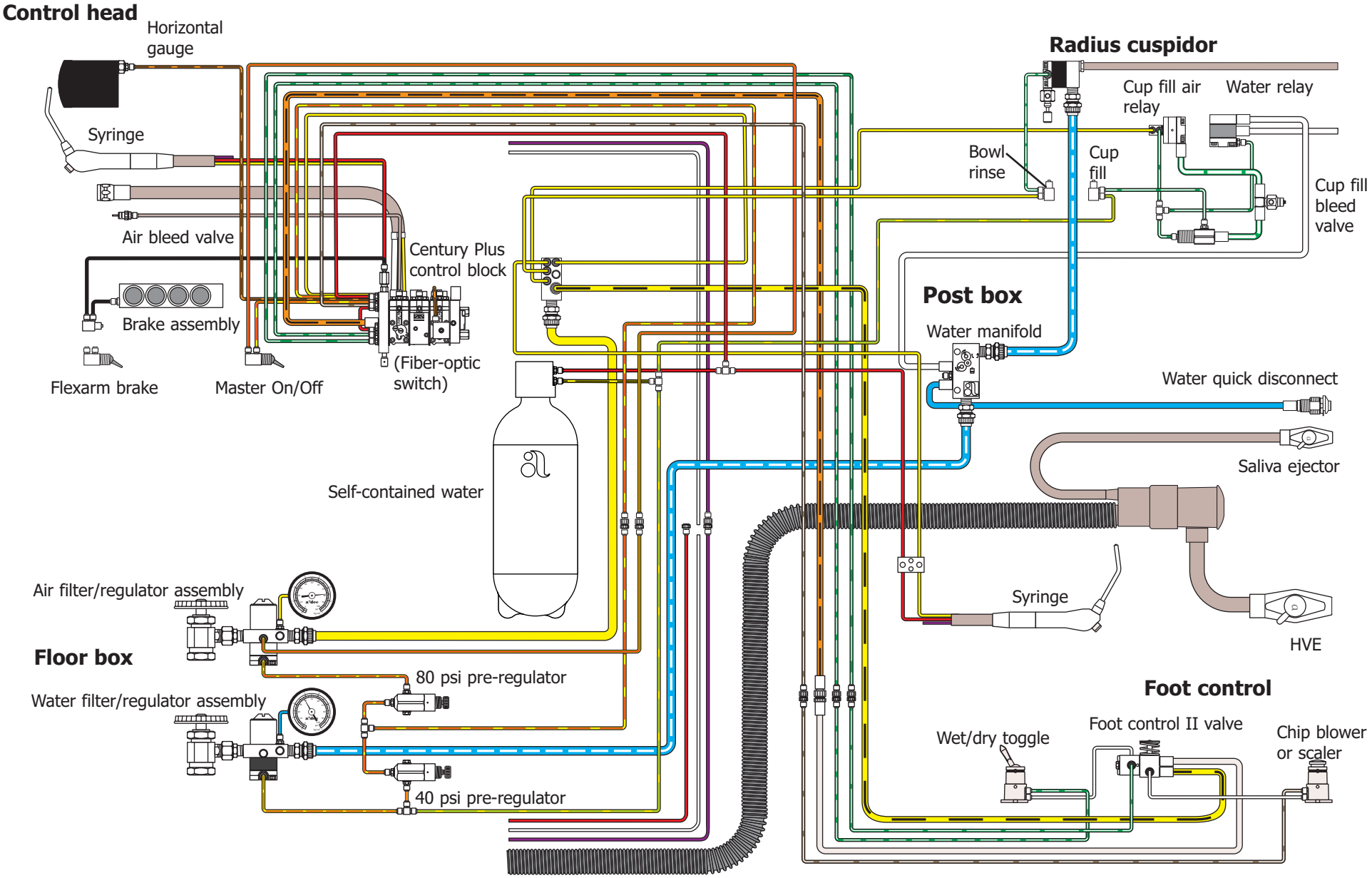
After November 1999



Handpiece Controls

Cascade Delivery System Flow Diagram

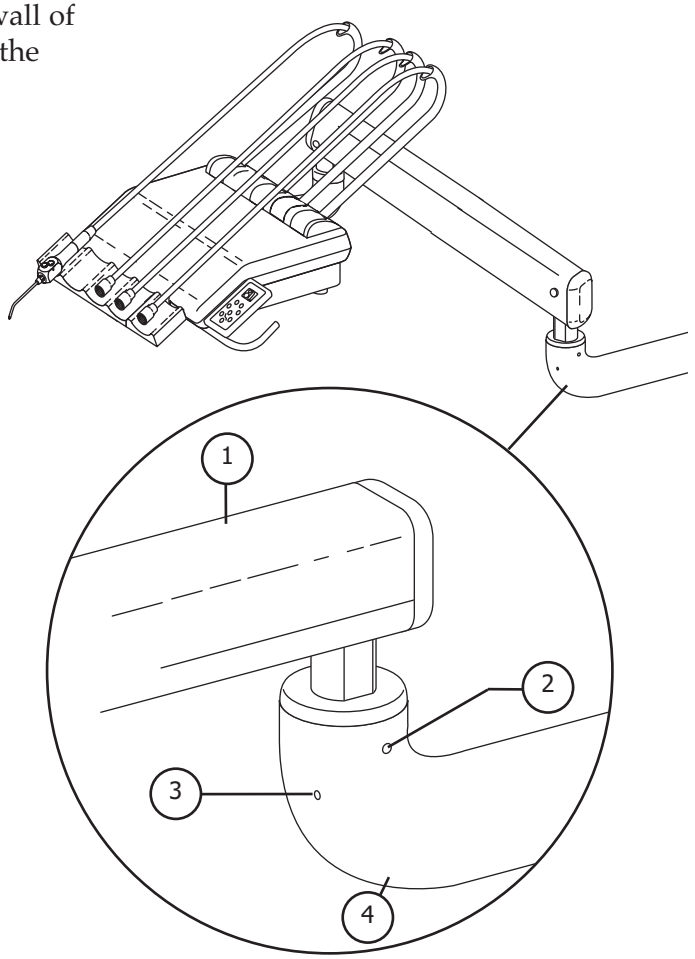
Before December 1999



Adjusting Horizontal Drift (Cascade)

To eliminate horizontal drift of the control head, adjust the tension setscrew. This causes the cup point to seat itself against the wall of the internal bushing. Use a 3/32" hex key for adjusting both the tension and the retaining/alignment setscrews.

Item #	Part Number	Description
1	35.1514.00	Flexarm assembly
2	007.024.00	Tension setscrew
3	007.058.00	Retaining/alignment setscrew
4	35.1386.00	Rigid arm post assembly

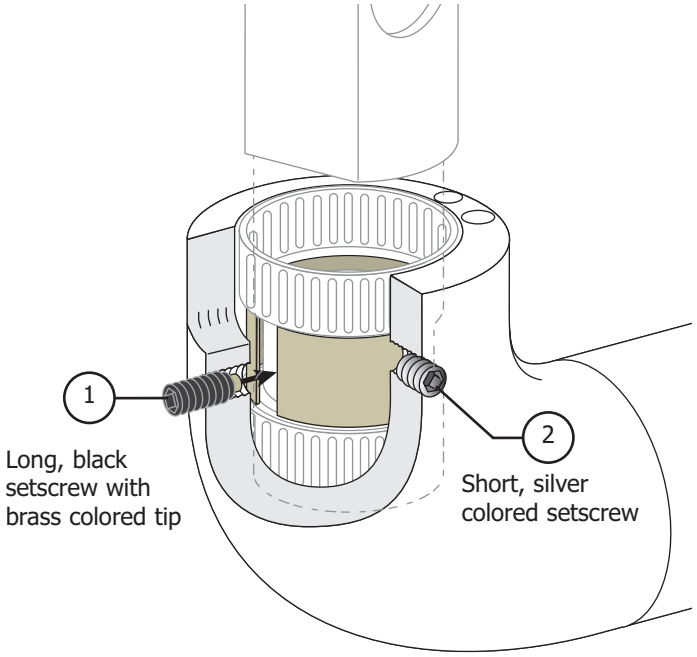


Cascade Control Head Flexarm

Adjusting the Tension Setscrew (Cascade)

Follow these steps to adjust the tension setscrew.

Task	Description
1	Remove the tension setscrew and the retaining /alignment setscrew. Reinstall both, making sure they are in the correct locations. Do not tighten.
2	Tighten the tension setscrew until it comes to a stop. Then tighten it an additional quarter turn (20 - 24 inch pounds).
	NOTE: It is important to repeat step two. Loosen the setscrew and repeat the step twice. This will ensure the setscrew is seated.
3	Check flexarm tension and adjust the setscrew to achieve the desired result.



Adjustment Setscrews

Adjusting the Retaining/ Alignment Setscrew (Cascade)

Follow these points to adjust the retaining/ alignment setscrew.

- Tighten the retaining alignment setscrew until it passes through the opening of the bushing and presses against the knuckle.
- Loosen the setscrew a quarter turn.

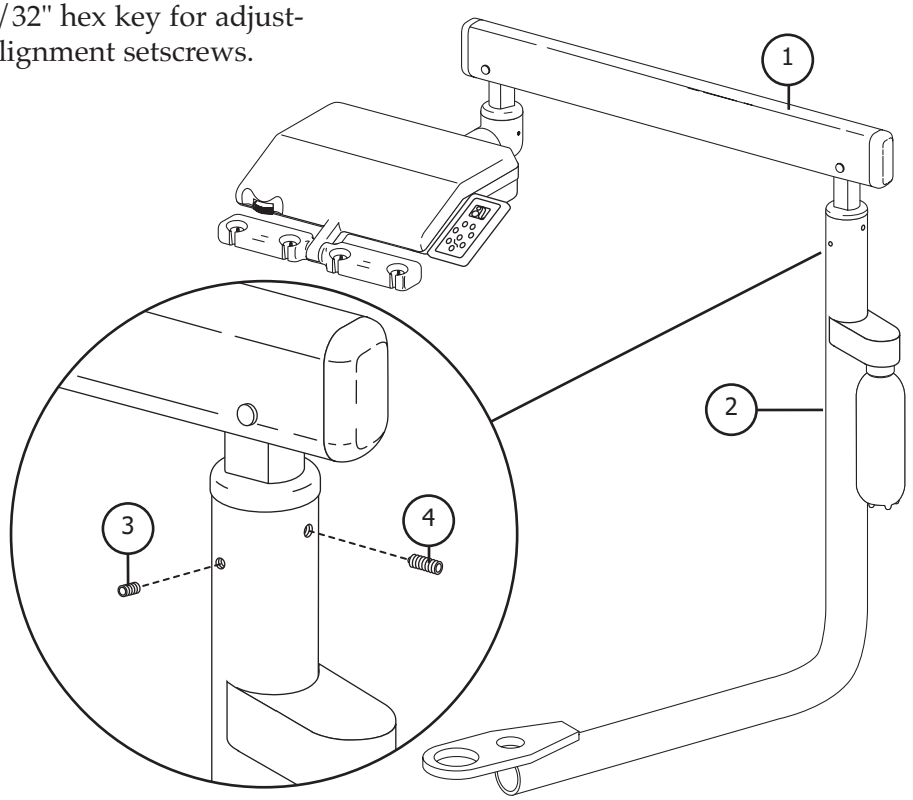
NOTE: The brass colored tip on the end of the retaining alignment setscrew shouldn't touch the knuckle when loosened a quarter turn.

Item #	Part Number	Description
1	007.058.00	Retaining/ alignment setscrew
2	007.024.00	Tension setscrew

Adjusting Horizontal Drift (Radius)

To eliminate horizontal drift of the control head, adjust the tension setscrew. This causes the cup point to seat itself against the wall of the internal bushing. Use a 3/32" hex key for adjusting both the tension and the retaining/alignment setscrews.

Item #	Part Number	Description
1	35.1514.00	Flexarm assembly
2	35.1611.01	Unit mount post assembly
3	007.024.00	Tension setscrew
4	007.058.00	Retaining/alignment setscrew, Black

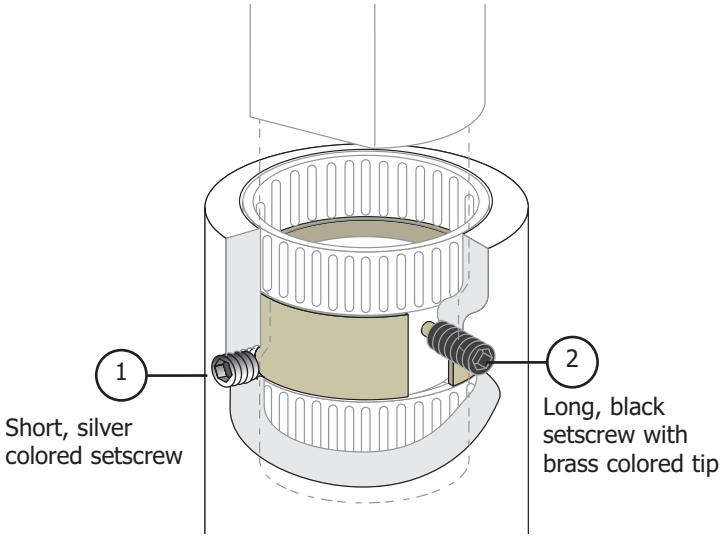


Cascade Control Head Flexarm

Adjusting the Tension Setscrew (Radius)

Follow these steps to adjust the tension setscrew.

Task	Description
1	Remove the tension setscrew and the retaining /alignment setscrew. Reinstall both, making sure they are in the correct locations. Do not tighten.
2	Tighten the tension setscrew until it comes to a stop. Then tighten it an additional quarter turn (20 - 24 inch pounds).
	NOTE: It is important to repeat step two. Loosen the setscrew and repeat the step twice. This will ensure the setscrew is seated.
3	Check flexarm tension and adjust the setscrew to achieve the desired result.



Adjustment Setscrews

Adjusting the Retaining/Alignment Setscrew (Radius)

Follow these points to adjust the retaining/ alignment setscrew.

- Tighten the retaining alignment setscrew until it passes through the opening of the bushing and presses against the knuckle.
- Loosen the setscrew a quarter turn.

NOTE: The brass colored tip on the end of the retaining alignment setscrew shouldn't touch the knuckle when loosened a quarter turn.

Item #	Part Number	Description
1	007.024.00	Tension setscrew
2	007.058.00	Retaining/ alignment setscrew

Troubleshooting Handpiece Controls

Tips and troubleshooting information are listed in the following charts to assist in diagnosing handpiece control problems. These charts are not intended to cover every situation, but do include the most common problems you may encounter.

Problem	Action
Holder(s) is difficult or too easy to rotate	Adjust the tension by loosening or tightening the friction pad setscrew (see *Individual and Unitized Holder*).
Whip assembly(ies) doesn't actuate the bleed valve(s)	**Task** **Descriptions** 1 Verify spring washers are installed between the whip assembly(ies) and mounting posts. If missing, install them between the whip assemblies and the whip mounting posts (see *Continental Whip*). 2 Add washers to both sides of the wheel assembly(ies). • Remove the button-head screw from the appropriate pin and post. • Slide the pin away from the whip assembly. • Install the spring washer between the wheel and post with curved side toward the whip assembly (see *Continental Whip*). • Slide the pin into the pin opening in the whip assembly. Secure the pin with the screw removed above. • Repeat for each whip assembly with whisker valve actuation. If this does not resolve the problem, go to step 3. 3 Inspect the air bleed valves and replace those that are defective. 4 Test the whip assemblies with the control head cover in place. Make sure the handpieces activate and deactivate as the whip assembly is pulled and released.

Problem	Action
Whip assemblies don't move freely or interfere with cover	Check for an improperly aligned mounting bracket. Slightly loosen the two screws securing the assembly in place (underside of control head). Do not remove the cover. Move the whip assembly until it moves freely.
Water leaks from the water vent hole on control blocks	Follow these steps to check for water leaks. **Task** **Descriptions** 1 Check for a failed water valve cartridge • determine which block is leaking • exchange the water valve cartridge with a known good one, and • test the unit. 2 If the water leakage has stopped, replace the failed water valve cartridge. Retest the unit and make sure there are no more leaks. If water is still leaking, continue with step 3. 3 Remove the water flow adjustment stem from the control block and inspect the o-ring and stem. Replace defective parts and test the unit. If water is still leaking, continue with step 4. 4 Check for a leaking valve stem • Tighten the valve stem to make sure it's not leaking and test the unit. • If the valve stem is still leaking, exchange it with a known good one and test the unit. • If the water leakage has stopped, replace the failed valve stem cartridge. • Test the unit. 5 Check for loose tie bolts.

Problem	Action
Coolant water is leaking from one handpiece control block	Follow these steps to check if coolant water is leaking. **Task** **Descriptions** 1 Remove the valve stem from the control block and inspect the o-ring and stem. 2 Replace defective parts and test the unit. If water is still leaking, continue with step 3. 3 Check for a leaking valve stem • Tighten the valve stem to make sure its not leaking. Test the unit. • If the valve stem still leaks, exchange the cartridge with a known good one. Retest the unit.
Air or water leakage from one of the valve assemblies	Replace the valve assemblies.
Air or water leakage from the syringe nut assembly	Check the following steps to stop leakage from the syringe nut assembly. • Make sure the syringe nut assembly is properly installed and tightened. Use a 5/32" hex key to tighten. • Replace o-rings, and syringe nut assembly.
No air and/or water from the syringe	Check the following steps to fix the syringe. • Check to make sure the master On/Off toggle and the air and water supplies are turned ON. • Check tubing for kinks or breaks.